**FACTOM**

**PROTOCOL**

**M3 Rollout Plan & Procedure**

**DOC 005**

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| VERSION | DATE | CHANGED BY | CHANGES |
| 0.1 | 2018-04-28 | Brian Deery | First draft |
| 0.2 | 2018-04-28 | Tor Hogne Paulsen | Applied standard formatting and drafted introduction. Proposed timeline and Authority Set population scheme. |
| 0.3 | 2018-04-29 | David Chapman, Brian Deery &  Niels Klomp | Add references, uniform names for operators and authority sets. Extra install instructions. Added fallback procedure if a leader isn’t ready. Added reward start height. |
| 0.4 | 2018-05-21 | Tor Hogne Paulsen | Changed table in chapter 5. |
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# Introduction and Scope

* 1. This document describes the envisioned and planned process of distributing control of the Factom Network to the broader Factom community represented by a planned set of 65 Authority Nodes.
  2. The status as of the writing of this document (2018-04-29) is that Factom Incorporated hosts and controls all 18 of the current Factom Network Authority Nodes. They are running on v0.4.2.22. M3 factomd is v 5.0.0.
  3. The intended end-state for the Factom Network is to include 65 Authority Nodes, and upon reaching that goal this document will be retired.

# Proposed Timeline

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Phase** | **Task** | **Description** | **Planned date** | **Executed** | **Reference** |
| 1 | New code deployment | Factom Inc. deploys M3 code on mainnet | 2018-04-30 | No | 3.3. |
| 2A | Follower nodes deployed by operators | Operators: deploy follower nodes on mainnet | Continuous | Ongoing | 3.4.2.1. |
| 2B | Test Portainer network | Connect some follower nodes to portainer network | 2018-04-30 | No | 3.4.2.2.1. |
| 2B | Test Portainer network | Convert the Testnet Leaders over to Portainer based docker images. | 2018-05-01 | No | 3.4.2.2.2. |
| 2B | Test Portainer network | Test Portainer System (start/stop/control) on testnet | 2018-05-01 | No | 3.4.2.2.3. |
| 2B | Test Portainer network | The first 10 Operators outside Factom Inc. install docker-based M3-code for Mainnet and connect to the portainer system. | 2018-05-02 | No | 3.4.2.2.5. |
| 2B | Test Portainer network | Test Portainer System (start/stop/control) on mainnet, as well as brain swap if available. | 2018-05-02 | No | 3.4.2.2.6. |
| 2C | New Factoids are created | Promotion of the first operator outside factom inc. to the Authority Set. | 2018-05-03 | No | 3.4.2.3.1. |
| 2C | Start adding more entities | Start populating the Authority set with the remaining selected Authority Set Operators | 2018-05-04 | No | 3.4.2.3.4. |
| 3A | Server rewards begin | Authorities contributing on this date are rewarded with new Factoids | 2018-05-10 | No | 3.5.1. |
| 3B | Create software for adding FCT-address and set efficiency | Allow identities to be created which support receiving coinbase FCT | TBD | No | 3.5.2. |
| 3C | Operators creating and populating identities | Identities and secret keys (lvl 1-4) needs to be created in a safe manner by all Authorities | TBD | No | 3.5.3 |

# Rollout phases

* 1. Factom Milestone 3 (M3) has 3 distinct objectives that will happen in 3 different overlapping phases:

**Phase 1** - Objective: New code deployment

**Phase 2** - Objective: Distribution of control

**Phase 3** - Objective: New Factoids are created

* 1. The phases have different requirements and timelines
  2. Phase 1 - New Code Deployment
     1. The Factom network is going through a non-reverse compatible software change after a year of maintaining backwards compatibility. This is similar to a hard fork. Phase 1 is scheduled for Monday April 30, 2018.
     2. Follow progress at <https://status.factom.com/>
     3. Non-upgraded nodes will not see new blocks. There are no groups that will maintain the older software. This is not an airdrop, spinoff, coin swap, or contentious fork. It uses the same genesis block and chain history as before.
     4. Wallets will continue to operate without upgrading.
        1. After the upgrade, both *Enterprise Wallet* and the API wallet *factom-walletd* will continue to operate normally against updated factomd nodes.
        2. There will be an upgrade window for the courtesy node provided by Factom Incorporated, which powers the *Enterprise Wallet* by default. After the upgrade window Monday, Enterprise Wallet will resume normal operation.
        3. No existing FCT balances will change by this upgrade. Only wallet users who run a full node will have to take action. Note the Upgrade Procedure below.

* 1. **Phase 2** - **Distribution of control**
     1. This phase is about replacing the control of the network with disparate parties.
     2. The goals for Phase 2 are:
        1. **2A**) Prepare Selected Operators as M2 follower nodes
           1. Selected Operators can begin downloading the M2 blockchain to prepare for installing M3 docker code on their mainnet servers. This would mean installing the latest M2 release from <https://github.com/FactomProject/distribution> or from source https://github.com/FactomProject/FactomDocs/blob/master/installFromSourceDirections.md.
           2. Besides running the M2 factomd, no additional configuration is needed. The M2 database can be installed in a M3 docker volume to speed up the bringup process. Never use the M3 Testnet database as a starting point!
        2. **2B**) Test Portainer network reset
           1. Convert some of the Testnet followers to connect into the Portainer system and test bringing the followers up and down.
           2. Convert the Testnet Leaders over to Portainer based docker images.
           3. Test the start/stop/remote control abilities of the Portainer system on Testnet.
           4. Relevant links:

<https://github.com/portainer/portainer>

<http://demo.portainer.io/>

* + - * 1. The 10 (or however many are ready) non-FactomInc Operators will install the docker based M3 code for Mainnet and connect into the Portainer system as followers.
        2. The ability to reboot the nodes (while acting as followers) will be tested on Mainnet.
        3. Alternate node types (i.e. for brain swap) should be tested if available.
      1. 2C) New M3 Leaders are created
         1. Thursday May 3 - The first of the Selected Operators will be promoted to a Federated server ( total number for promotion TBD).
         2. This will give some time to ensure that a poor connection will result in the leader being faulted out if it goes poorly.
         3. This step will be informed by the progress of phase 3 for the various Operators. They should have an identity with a factoid address and efficiency before promotion.
         4. More entities are brought into Authority set.
  1. Phase 3 - New Factoids are created

Coinbase transactions will be non-zero.

* + 1. 3A - Authority Node rewards will not begin until until block #140200, which is expected around May 10, 2018. This date is when it is planned for Guide nodes make up a minority of the Authority set. New Factoids will be created in the coinbase 1000 blocks later at #141200.
    2. 3B - Create software for adding FCT address and efficiency
       1. There exists software for the testnet to add efficiency and a FCT address, but it was quickly spun up as a server side crypto library.
       2. It should not be trusted for determining production payouts.
       3. Only offline or locally run software should deal with identity key operations.
    3. 3C) Operators should make identities and populate to the blockchain
       1. This is tested on the testnet. Operators should make secure paper copies of their identity keys, ideally using offline computers with ephemeral CD bootable linux machines.
       2. This may not be possible for many operators, so avoiding saving the key to the HDD might be the best that they can do.
       3. Note, if enough of the operators identity keys get compromised, it can result in a systemic risk for the Factom network.
       4. It is not merely their own factoids that these leaders are protecting. Please be careful with identity keys. They are arranged in a hierarchy, so higher numbered keys can replace lower level keys (note, this key replacement is not implemented in factom yet, so only key 1 is viable at this point).
       5. The existing factom inc identities do not have items in their identity which specify efficiency or a factoid address. This means that they are considered 100% efficient, and no coinbase payouts will happen for them. Factom Inc will not drop below 100% efficiency for it’s two nodes until after other parties control a majority of the Authority set. Factom Inc will not get a disproportionate number of new Factoids.

# M3 related procedures

* 1. Upgrade Procedure for followers
  2. These instructions are for normal users of factomd, like businesses writing to the blockchain, exchanges, wallet users with a full node. These nodes are also referred to as Follower nodes. Authority Node operators have a different procedure documented elsewhere.
  3. After v5.0.0 is pushed to the Master branch, upgrades should be made. Watch <https://status.factom.com/> for Phase 1 upgrade progress.
  4. Link to Factomd: <https://github.com/FactomProject/factomd>
  5. Built from source
  6. Warning: Please do not build Factomd on your production servers! Use another machine to build Factomd. You don’t want compilers on production servers.
  7. Golang 1.10 or above is recommended for factomd. To check your golang version, in a terminal run **go version**. Some OS distributions supply out of date golang versions.
  8. These instructions will guide a user through the compilation steps for factomd <https://github.com/FactomProject/FactomDocs/blob/master/installFromSourceDirections.md#install-factom>
  9. Prebuilt Binary Installers
  10. Installers for Debian/Ubuntu and Windows will be available within a day or two after release.
  11. <https://github.com/FactomProject/distribution>

# Authority set population

* 1. Authority Set Node Operators (“Operator”) will be included in the Authority Set by their internal ranking provided by the Authority Set Application Process(es). This process is described as “Promotion”.
  2. If an Operator is not ready to be promoted when it is their turn, the next Operator in the sequence will be offered to be promoted instead and the team that was not ready will drop to the bottom of their 11 or 21 queue. As such, teams should be ready at least a couple days ahead of their scheduled rollout or they may be dropped to the end of the queue.
  3. The Operator is required to follow the process described in *Doc 110 - Process for including a new entity in the Authority Set*.
  4. The table below describes the tentative dates for promotion into the Authority Set. Note that this table will undergo many revisions depending on a large number of fluid factors. Also note that Operators that has been promoted to the Authority Set is designated by green cell color.

|  |  |  |
| --- | --- | --- |
| **Operator name** | **Onboarding group number** | **Tentative date for promotion** |
| Factom Inc. | # 0 | Promoted |
| Blockchain Innovation Foundation | # 1 | Promoted |
| Factomize LLC | # 1 | Promoted |
| Go Immutable | # 1 | Promoted |
| The Factoid Authority (TFA) | # 1 | Promoted |
| DBGrow Inc | # 1 | Promoted |
| Matter of Fact, LLC | # 1 | Promoted |
| LUCIAP | # 1 | Promoted |
| Block Party | # 1 | Promoted |
| Federate This | # 1 | Promoted |
| Factoshi | # 1 | Promoted |
| Building Innovation Management Ltd | # 2 | Promoted |
| HashnStore | # 2 | Promoted |
| CryptoVikings | # 2 | Promoted |
| LayerTech (prev: NX Capital) | # 3 | Promoted |
| Canonical Ledgers | # 3 | Promoted |
| RewardChain | # 3 | Promoted |
| Blockrock Mining AS | # 4 | Promoted |
| SyncroBlock | # 4 | Promoted |
| Factomatic LLC | # 4 | Promoted |
| Stamp-IT | # 4 | Promoted |